Library

HONOLULU
LA JOLLA
MONTEREY
TIBURON

SOUTHWEST FISHERIES CENTER

MONTHLY REPORT - AUGUST 1983

TABLE OF CONTENTS AND RESEARCH HIGHLIGHTS

PAGE

PUBLICATIONS 1

HONOLULU LABORATORY 5
Catch and Effort Statistics Summarized. 6

LA JOLLA LABORATORY 8
NMFS Fisheries Centers Sponsor Symposium on Fish Evolution 8
First Joint Albacore and Squid Assessment Cruise Completed. 17
NOAA Ship Surveyor Tracks Dolphin Schools 19

TIBURON LABORATORY 22
Fishery for Pelagic Red Crabs May Be Revived. 23

PACIFIC ENVIRONMENTAL GROUP 24
Fisheries Manager from Chile Visits PEG to Initiate Cooperate Research Project. 24

FISHERIES INFORMATION SYSTEMS AND AUTOMATIC DATA PROCESSING 26
Salmon "Credit Card" Data Collection System Evaluated 27
Computerized Resources Allocation System Designed for Center. 27

MISCELLANEOUS 29
Honors, Awards, Seminars, Public Affairs, Visitors Meetings and Travel, and Personnel 29

NOAA/NMFS

SOUTHWEST FISHERIES CENTER

CENTER ADMINISTRATION — La Jolla, California

Center Director ..... *Izadore Barrett*
Deputy Director ..... *John F. Carr*
Planning Officer ..... *David J. Mackett*
Data Systems Manager ..... *Fred J. Kellenberger*
Executive Officer ..... *Benjamin F. Remington*

LABORATORIES & DIVISIONS

Coastal Fisheries Resources Division, Chief ..... *Reuben Lasker*
La Jolla, California
Honolulu Laboratory, Director ..... *Richard S. Shomura*
Honolulu, Hawaii
Oceanic Fisheries Resources Division, Chief ..... *Gary T. Sakagawa*
La Jolla, California
Pacific Environmental Group, Chief ..... Vacant
Monterey, California
Tiburon Laboratory, Director ..... *Norman J. Abramson*
Tiburon, California

The Monthly Report of the Southwest Fisheries Center is compiled by the Technical Writing/Editing Group at La Jolla from material submitted by the Center's staff. To change the delivery address of the Monthly Report, or to cancel your subscription, please notify Lillian Vlymen, Editor, at P.O. Box 271, La Jolla, CA 92038.

SOUTHWEST FISHERIES CENTER
LA JOLLA, CALIFORNIA

HONOLULU LABORATORY
LA JOLLA LABORATORY
TIBURON LABORATORY
PACIFIC ENVIRONMENTAL GROUP

MONTHLY REPORT - AUGUST 1983

STATUS OF PUBLICATIONS

Published

Alvariño, Angeles, Hosmer, Stephen C. and Ford, Richard F. 1983. Antarctic Chaetognatha: United States Antarctic Research Program Eltanin Cruises 8-28, Part 1. In Louis S. Kornicker (ed.), Biology of the Antarctic Seas XI Antarctic Research Studies Volume 34. Am. Geo. Union.

Eldridge, Maxwell B., Joseph, Jeanne D., Taberski, Karen M., and Seaborn, Gloria T. 1983. Lipid and fatty acid composition of the endogenous energy sources of striped bass (Morone saxatilis) eggs. Lipids 18(8):510-513.

The unique physiological flexibility of the early life stages of striped bass is attributed to the calorie-rich endogenous energy sources of the striped bass egg. Eggs of different aged striped bass from geographically separate populations were examined for lipid and fatty acid compositions and were found to be basically similar. Yolk components of the eggs contained significantly less total lipid than oil globules, were more diverse in lipid class composition and consisted mostly of polar lipids. Oil globules were entirely lipid material consisting predominantly of steryl/wax eaters. Fatty acid compositions of yolk and oil globules differed according to their respective lipid compositions. The functional significance of these lipids is discussed in relation to the ecological context of the early life stages.

THIS REPORT DOES NOT CONSTITUTE PUBLICATION AND IS FOR INFORMATION ONLY.

Squire, James L., Jr., and Nielsen, Daphne V. 1983. Results of a tagging program to determine migration rates and patterns for black marlin, Makaira indica, in the Southwest Pacific Ocean. NOAA Technical Report NMFS-SSRF-772, 19 pp.

Marine game fish anglers reported tagging a total of 2,576 black marlin, Makaira indica, from 1968 through 1978 near the Great Barrier Reef, north Queensland, Australia, as part of the National Marine Fisheries Service Cooperative Marine Game Fish Tagging Program-Pacific Area. Sixty tagged black marlin were recaptured during an 11-year period for a recapture rate of 2.3%. Average weight of black marlin tagged was estimated to be 175 kg (385 lb). Anglers tend to overestimate weight at time of tagging and short-term recaptures (0-60 days) indicate an average angler overestimate of 16 kg (35 lb) per marlin.

Sex was determined for 28 recaptures; 25 (89%) were reported as males and 3 (11%) reported as females. Average weight of males at recapture was 91 kg (195 lb), for females 221 kg (488 lb).

Vector analysis of time, distance, and direction data for tag recovery locations indicated migration direction (vector mean bearing) and distance (vector mean distance from point of tagging) by periods of release time: 0-60 days, 121°/72 nmi, 61-120 days, 134°/446 nmi, 121-240 days, 097°/1,256 nmi.

The greatest distance (2,100 nmi) recorded from the point of tagging was for a black marlin recaptured northeast of New Zealand, 235 days after tagging. Black marlin tagged early in the north Queensland fishing season (September) tended to migrate away from the area of tagging at a lower rate for the first 0-60 day period than black marlin tagged in October, November, or later in the fishing season.

Tag recoveries were made near the tagging location 1, 2, and 4 years after tagging. Locations of recapture for these black marlin were calculated to be a vector mean distance of 58.3 nmi from the point of tagging. Longline high catch rate areas for black marlin indicate a monthly movement for the first 240 days of release time not unlike that observed by tagging. In the summer the centers of high catch rate show a south to southeast movement off the east coast of Australia from the tagging area, then a northward movement in the winter and spring to the New Guinea-Bismarck Archipelago-Solomon Islands area. The amount of interchange with the Indo-Pacific and areas to the north is unclear, although emigration from the tagging area to north of New Guinea was recorded.

Uchida, Richard N. 1983. Summary of environmental and fishing information on Guam and the Commonwealth of the Northern Mariana Islands: A review of plankton communities and fishery resources. U.S. Dep. Commer., NOAA Tech. Memo. NMFS, NOAA-TM-NMFS-SWFC-33, 159 p.

Approved by Center Director

Herrick, Samuel F., Jr. 1982. U.S. tuna trade summary. For consideration for publication in Marine Fisheries Review.

Hohn, Aleta A. and Hammond, Philip O. Growth in the first year of the spotted dolphin, Stenella attenuata, in the eastern tropical Pacific. For consideration for publication in the Canadian Journal of Fisheries and Aquatic Sciences.

Lasker, Reuben. What limits clupeoid production? For consideration for publication in a Special Issue of Canadian Journal of Aquatic Sciences.

Paul, Linda M.B. Investigations into escape vent effectiveness and ghost fishing in captive populations of the spiny lobster, Panulirus marginatus. Proceedings of the Special Symposium on Resource Investigations in the Northwestern Hawaiian Islands, May 25-27, 1983, University of Hawaii, Honolulu.

Perrin, W.F. and Henderson, J.R. Growth and reproductive rates in two populations of spinner dolphins, Stenella longirostris, with different histories of exploitation. For publication in the International Whaling Commission.

Walker, Michael M., Kirschvink. Joseph L., Chang, Robin S.B., and Dizon, Andrew E. A candidate magnetic sense organ in the yellowfin tuna, Thunnus albacares. For consideration for publication in Science.

Administrative Reports

Seki, Michael P. 1983. Summary of pertinent information on the attractive effects of artificial structures in tropical and subtropical waters. SWFC Admin. Rep. H-83-12.

Uchida, Richard N. 1983. Summary of pertinent biological characteristics of potential ocean thermal energy conversion (OTEC) sites in the Pacific Ocean. SWFC Admin. Rep. H-83-13.

Translation

Miyoshi, Masao. 1982. The present status and problems in Japan's distant-water purse seine fishery (Kaigai maki-ami gyogyō no genjō to kadai). Suisan Sekai 31(3):28-30. (Engl. transl. by Tamio Otsu, 1983, 4 p. Transl. No. 84; available Southwest Fish. Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96812.)

HONOLULU LABORATORY

INSULAR RESOURCES INVESTIGATION

Ecosystem Modeling Package Developed

Dr. Jeffrey J. Polovina, Leader, Resource Assessment Investigation of the Mariana Archipelago (RAIOMA) Program, reports that based on the ecosystem modeling work for the coral reef ecosystem at French Frigate Shoals, a general ecosystem modeling package, "ECOPATH," has been developed. Dr. Polovina and Mark D. Ow, Computer Programmer, have written a computer program in BASIC for a microcomputer to implement ECOPATH.

ECOPATH estimates production and mean annual biomass for user-specified components of a marine ecosystem based on inputs which consist of mortality, food consumption, diet composition, and fishery catches, if there is fishing mortality. Unlike some of the more complex ecosystem models, ECOPATH is not a simulation model but is primarily a procedure to estimate a production budget in an ecosystem under steady state conditions. Since its input needs are relatively simple, ECOPATH can be useful in modeling ecosystems where detailed data are scarce, often true in studies of tropical ecosystems.

A user's manual will be completed shortly and the manual, together with a listing of ECOPATH, will be available to interested users.

Schedule Developed for Series of OTEC Meetings

Richard N. Uchida, Leader, Insular Ecosystem Program, assisted NOAA's Dr. Edward Myers, Office of Ocean and Coastal Resource Management, Ocean Minerals and Energy Division, in developing a schedule for a series of meetings in early September with state and university representatives, private industry, and contractors. During these meetings, guidelines will be devloped which will assist potential applicants as well as NMFS in assessing the impact of ocean thermal energy conversion (OTEC) operations to fisheries. In conjunction with these scheduled meetings, two administrative reports (H-83-12 and H-83-13) of the Honolulu Laboratory were circulated to agencies and participants involved.

Manuscript Preparation Continues

James J. Uchiyama, Fishery Biologist, worked on revisions of a manuscript on mahimahi age and growth and the Northwestern Hawaiian Islands (NWHI) fishery atlas. In addition, the following two papers submitted to the Proceedings of the NWHI Symposium were accepted for publication: "Life history, distribution, and abundance of bottomfishes in the Northwestern Hawaiian Islands" by James H. Uchiyama and Darryl T. Tagami, and "Length-weight and standard length-fork length relationships of deep-sea handline

fishes of the Northwestern Hawaiian Islands" by James H. Uchiyama, Sally H. Kuba, and Darryl T. Tagami. A manuscript entitled "Ciguatera and the feeding habits of the greater amberjack, Seriola dumerili" by research assistant Robert L. Humphreys, Jr., and Steven H. Kramer was also submitted for publication in the Proceedings.

Research assistant Michael P. Seki completed a draft report, "Techniques for assessing the impact of OTEC operations to fisheries." Briefly, this report describes the techniques for obtaining the types of information required to develop predictive models for assessing the impact upon fisheries by events such as impingement and entrainment at the intakes and biota attraction to the structure.

Reginald M. Gooding, Fishery Biologist, completed drafts of the following manuscripts: "Trapping surveys for the caridean deepwater shrimps, Heterocarpus laevigatus and H. ensifer, in the Northwestern Hawaiian Islands," and "Predation on released spiny lobsters, Panulirus marginatus, during field tests in the Northwestern Hawiian Islands." Gooding also worked on a manuscript, "The effect of lobster offal on spiny lobster, Panulirus marginatus, trap catches in the Northwestern Hawaiian Islands." Additional data are being included along with further analysis.

* * * * * * * * * *

R. Uchida reviewed the following manuscripts and management and development plans: "The potential range of ecological effects resulting from OTEC operations" by David S. Peters, NMFS, Beaufort Laboratory; "Bioassay techniques for assessing the potential to primary productivity due to OTEC-induced water mass redistribution" by William G. Sunda and Susan A. Huntsman, NMFS, Beaufort Laboratory; "Draft ocean management plan" by the State of Hawaii, Department of Planning and Economic Development; and "Fisheries development plan" by the Pacific Basin Development Council.

Richard Uchida also prepared a draft agenda and announcement for the seamount workshop, scheduled to be convened at the Far Seas Fisheries Research Laboratory in Shimizu, Japan, in March 1984. The draft agenda and announcement were circulated for comments.

FISHERY MANAGEMENT RESEARCH PROGRAM

Catch and Effort Statistics Summarized

Robert A. Skillman, Leader, Fishery Management Research Program, reports that in support of the Western Pacific Regional Fishery Management Council, work continued on summarizing catch and effort statistics primarily on billfishes, mahimahi, wahoo, and sharks (pelagic management unit species). A draft administrative report presenting cross tabulations of catch by area

fished and fishing gear for these species was completed, as was a companion report presenting cross tabulations of catch of these species for areas and gears. Long-term trends of historical catches for these species in Hawaii are being determined and a correlation matrix is being computed of each catch per unit effort (CPUE) figures for these species by various domestic fishing gears and Japanese tuna longline gear. These statistics will be incorporated into draft administrative reports on historical catches and estimates of CPUE. Also, at the request of the Southwest Region and with the permission of the Guam Fishermen's Cooperative (GFC), landings data (quantity and revenue) made available by GFC were summarized for bottom fish and large pelagic species.

Dr. Skillman also reports that a chart with modified FAO fishery statistical areas was prepared and sent to the Office of Aquatic Resources in Pago Pago, American Samoa in an attempt to facilitate the collection of area fished data from U.S. purse seiners landing there. Also arrangements were started for entering into a contract with the Government of Guam for the collection of tuna purse seine landings data in the port of Agana.

NOAA Jr. Fellow Completes Third Summer with Fishery Management Research Program

Daniel R. Locey, NOAA Jr. Fellow, has completed his third summer with the Fishery Management Research Program. This summer his accomplishments include setting up the multiuser operating system on the Program's microcomputer, configuring commercial application packages to run under the new operating system, writing a dBASE II computer program for the summarization of Hawaii Division of Aquatic Resources (HDAR) monthly catch data file by four species groups of interest to the Program, and a dBASE II program for tracking assignments coming in to the Program. The HDAR monthly catch data are the first to be transferred from the University of Hawaii (UH) mainframe computer and processed on an inhouse microcomputer.

* * * * * * * * * *

Samuel G. Pooley, Industry Economist, reports that a cooperative effort between the Honolulu Laboratory and the Council to test market pelagic armorhead and alfonsin caught on a recent seamount cruise resulted in 10 wholesale fish dealers purchasing the fish at an average price of $1.25 per pound.

LA JOLLA LABORATORY

Coastal Fisheries Resources Division

NMFS Fisheries Centers Sponsor Symposium on Fish Evolution

From 10 foreign countries and the U.S., 250 specialists on the early life history of fish gathered August 15-18 at the University of California, San Diego, in La Jolla, California, for an unique conference sponsored by the four Fisheries Centers in the National Marine Fisheries Service.

Two years in the planning, the meeting entitled, "Ontogeny and Systematics of Fishes," was dedicated to the memory of Dr. Elbert Halvor Ahlstrom, a government scientist at the NMFS Southwest Fisheries Center in La Jolla, California, who developed techniques for identification of eggs and larvae of marine fishes and methods for assessing population of these fishes. Fisheries scientists around the world, trained by Dr. Ahlstrom, use information derived from sea surveys of larval fish for assessing the potential biomass of their fisheries resources.

Participants to Ontogeny and Systematics of Fishes Symposium assembled on lawn at the University of California, San Diego.

Planning for this Symposium began in 1980 with the idea that such a symposium would serve as a means to finish the book on fish ontogeny begun by Dr. Ahlstrom and Dr. Geoffrey Moser, now Leader of the Ecology and Taxonomy of Fishes Task at the La Jolla Laboratory, some years before Dr. Ahlstrom's death in 1979.

A Steering Committee, selected by Dr. Moser, met for an initial planning meeting in October 1981. The Committee consisted of Dr. Daniel Cohen, NMFS Systematics Laboratory, Washington, DC; Mr. Michael Fahay, NEFC, Sandy Hook Laboratory, Highlands, NJ; Dr. Arthur Kendall, NWFC, Seattle, Washington; Dr. Geoffrey Moser (Chairman), SWFC; Dr. William Richards, SEFC, Miami, FL; Dr. Sally Richardson, Gulf Coast Research Laboratory, Ocean Springs, MS; who completed a proposal that included a symposium program, list of invitees, budget and timetable. The NMFS Research Council approved the proposal and established that funding for the symposium and resultant book should be shared by the four NMFS Fisheries Centers. A second planning meeting was held in February 1982 to work out details and modifications of the program; the Committee met again in March 1983 to make final preparations for the symposium and edit initial drafts of the contributor's manuscripts.

To accomplish this, the major part of the symposium was a survey of all major fish groups. The presentations for each group were divided into two parts. Part I dealt with the present state of taxonomic knowledge of the group, including a survey of its constituent members and their distributions. Following this was a summary of what is known of the early life history stages of the group, including the eggs, larvae and special ontogenetic stages between the larvae and juveniles. This was then followed by an assessment of meristic, morphological pigment characters that typify the early life history stages of the group and a treatment of the range of diversity of these characters. The plates of illustrations of the early life history stages of the group appeared here. Part I, thus, introduced the taxon, surveyed what is known of its ontogeny, assessed the principal and diverse taxonomic characters of its early life history stages and provided a set of illustrations that serve as a broad-spectrum identification guide. This provided the background for the consideration of systematic relationships, the subject of Part II. This assessment was based on characters of the adults and of the early life history stages and was divided into two sections, one addressing relationships among members of the group and the other addressing relationships of the group to other taxa. For each of these sections, there was first a brief review of current principal hypotheses of systematic relationships and, second, a discussion of the contributions of early life history characters of these hypothesis.

The contributions of early life history characters to this discussion were highly variable from group to group, depending both on the state of knowledge of ontogenetic characters of a particular group and on the utility of these characters. The types of systematic analyses (cladistic, evolutionary, phenetic or other) employed varied from contributor to contributor and were elucidated by the use of cladograms and other diagrammatic representations.

A major goal was to make Dr. Ahlstrom's notes and partial manuscripts available to contributors so that these could be incorporated in the manuscripts and published in a timely way. To ensure this, copies of these notes and unfinished manuscripts were sent to the members of the Steering Committee who in turn sent them to the appropriate contributors for inclusion in their manuscripts.

An important element in the project was the employment of an illustrator under contract, Betsy Washington, who worked under the direction of Dr. Sally Richardson to produce illustrations of fish larvae for the many contributors. In addition, unpublished illustrations of fish eggs and larvae from the collection at the SWFC were made available to contributors. Numerous additional drawings were made by scientific illustrator Henry Orr and fishery biologist Barbara Sumida-MacCall for contributions from the La Jolla Laboratory; Roy Allen provided assistance with graphics. Numerous specimens from the CalCOFI collections and other collections of the Laboratory were also made available to contributors.

Eighty-nine papers were presented by 76 speakers at the Symposium. The Symposium began with a welcoming address by Dr. Barrett and a memorial to Dr. Ahlstrom by Dr. Reuben Lasker, the Symposium convener. These were followed by a keynote paper entitled, "Ontogeny, Systematics and Fisheries" by Dr. J.H.S. Blaxter and two conceptual papers: "Ontogeny, Systematics and Phylogeny" by Dr. Dan Cohen and "Early Life History Stages and their Characters" by Drs. Kendall, Ahlstrom and Moser. The afternoon of the first day was dedicated to a poster session on techniques and approaches to the field, chaired by Dr. Sally Richardson. Included in this session were two posters from the Ecology and Taxonomy Program: "Early Life History Descriptions" by E.M. Sandknop, B.Y. Sumida and H.G. Moser and "Illustration Techniques" by B.Y. Sumida, in collaboration with B. Washington and W. LaRoche.

The three days which followed were devoted to the systematic survey of major fish groups. The staff of the Ecology and Taxonomy program were collaborative authors on eleven papers presented during the three days:

Argentinoidei -- E.H. Ahlstrom, H.G. Moser and D.M. Cohen
Stomiatoidei -- K. Kawaguchi and H.G. Moser
Myctophidae I -- H.G. Moser, E.H. Ahlstrom and J.R. Paxton
Myctophidae II -- J.R. Paxton, E.H. Ahlstrom and H.G. Moser
Schindlerioidei -- W. Watson, E.G. Stevens and A.C Matarese
Traccinoidea -- W. Watson, A.C. Matarese and E.G. Stevens
Notothenoidea -- E.G. Stevens, A.C. Matarese and W. Watson
Blennioidea -- A.C. Matarese, W. Watson and E.G. Stevens
Ammodytoidei -- E.G. Stevens, A.C. Matarese and W. Watson
Icostoidei -- A.C. Matarese, E.G. Stevens and W. Watson
Pleuronectiformes -- E.H. Ahlstrom, K. Amaoka, D.A. Hensley, H.G. Moser and B.Y. Sumida

According to Dr. Barrett, Director of the Southwest Fisheries Center, these basic studies have a practical objective. Once increased knowledge and understanding of the critical early life stages of fishes is achieved, then

informed judgments on survival, recruitment and ultimately the limits of fishery production can be made to form the basis for sound multispecies fishery management decisions.

The papers presented by the scientists at the Symposium will form the basis for a Symposium volume to be published with a distribution date scheduled for the summer of 1984.

COMMERCIAL AND RECREATIONAL FISHERIES RESEARCH FOR MANAGEMENT

Development of Anchovy Statistical Model Progress

A conventional cohort analysis (virtual population analysis) calculates a time series of recruitments and age-specific fishing mortality rates from a time series of age-composition in the fishery. In essence, it calculates the abundances that must have existed in order to have supported the observed catches.

This approach is not feasible with northern anchovy. One problem is that the fishing mortality rates were, until recently, very low relative to natural mortality rates. A second problem is that natural mortality seems to have fluctuated substantially. However, the recent wealth of information obtained on anchovy permits a more comprehensive analysis. In addition to fishery age-composition, there are annual estimates of the population's spawning biomass and survey-based estimates of the age-composition. Including all three sources of data greatly increases the number of degrees of freedom available for estimation of the desired parameters.

The goal of current work by Dr. Richard Methot, Fishery Biologist, is development of a statistical model through which the set of parameters maximizing goodness-of-fit can be estimated. Three significant steps towards this goal have been achieved thus far. First, the analysis presented in SWFC Admin. Rep. LJ-83-17, "The historical spawning biomass estimates and population model in the 1983 anchovy fishery management plan," simultaneously examines the three data sets and is sufficient to produce initial estimates of the parameters (recruitment, fishing mortality rates, natural mortality rates, age-specific availabilities to the fishery and trawl survey). Second, a simulation routine has been developed which, when run with the initial parameter estimates, reproduces closely the population's fluctuations over the past 15 years. Third, an iterative routine which adjusts the parameters to improve the goodness-of-fit has been tested successfully on a simplified model.

Future work will include linking the minimization routine with the simulation routine to produce the complete statistical model. After further adjustments of the survey-based anchovy age composition, the complete model will be fit to the three data bases.

Egg Production Method Variability to be Simulated

Susan Picquelle, Statistician, continues work on a simulation of the variance of the egg production method's estimate of the northern anchovy's spawning biomass. The egg production biomass estimate is a function of five parameters and the variance of the estimate cannot be estimated directly. Picquelle will employ two methods of simulating the variance.

The first method is to fit a probability distribution to each of the five parameters, select a random observation from each of the probability distributions, then use these observed values in the egg production model to produce a biomass estimate. A distribution of biomass estimates is produced as this process is repeated many times. A probability distribution is then fit to this empirical distribution of biomass estimates and its variance is estimated.

The second method uses a technique known as the "bootstrap," a re-sampling scheme which uses the historical data sets. Values are randomly re-sampled with replacement from the historical data until the desired sample size is attained. These re-sampled values are then used to estimate the biomass in the usual way with the egg production model. The process is repeated many times, producing a distribution of biomass estimates as in the first method. The sample variance of this distribution is the bootstrap estimate of the biomass variance.

Effective September 18, Picquelle has been transferred to the Northwest and Alaska Fisheries Center (NWAFC). This simulation project will be completed there and the results published in the Egg Production Manual which is being produced under the direction of Dr. Reuben Lasker, SWFC, and Dr. Gary Stauffer, NWAFC.

Project Underway to Determine Value of Recreational Fishing

Economist Cindy Thomson has been working with Dr. Dan Huppert on a project to determine the value of recreational fishing. Recently they merged the 1979 recreational partyboat data with selected variables from the 1980 census. Travel cost and logit analyses will be applied to this combined data set to determine the variables affecting angler participation rates and the implicit economic value of a day of fishing.

COASTAL EASTERN PACIFIC POPULATION BIOLOGY OF FISHES

Study Continues to Define Parameters that Identify Condition of Field-Collected Fish Larvae

Fishery biologist Gail Theilacker is continuing to define parameters that identify the condition of field-collected fish larvae. Currently, a laboratory study of young anchovy is being analyzed. This study was designed

to correlate feeding history with the histological condition of tissues, determine the persistence of these diagnostic, histological characters, and determine diet-induced differences in growth.

Five groups of anchovy were reared for three weeks. The control (Diet I) was fed at yolk absorption (day 4 at 15.5°C) and feeding was delayed 1 to 4 days in the other groups (Diets II-V). Food additions to groups starved 1 and 2 days elicited an immediate eating response, but the response was delayed 15 to 20 minutes when fish were starved for 3 and 4 days.

Jack Metoyer, Biological Technician, measured the fish this month. An analysis of variance was used to test for starvation-induced differences in growth; length was transformed to natural logs. Theilacker then asked two questions: does the delay in feeding affect larval length at a given age and is the rate of growth the same for feeding fish, i.e., does an initial period of starvation affect subsequent growth? As would be expected, progressively increasing periods of starvation produced a decrease in fish size at a common age. The test of significance was determined at 10.8 days of age; p was less than 0.01 for all Diet combinations except for Diet IV vs V where p=0.8 (Table 1).

Table 1. Anchovy.

		$\bar{x}$ Standard length (mm)		
Diet	n	Age = 10.8d	Feeding for 6 days	(Actual age)
I Fed	452	5.58	5.51	(10)
II 1-day delay	640	4.87	4.96	(11)
III 2-day delay	394	4.48	4.75	(12)
III 3-day delay	372	4.00	4.32	(13)
IV 4-day delay	114	3.98	---	---

The second test compared fish length at an age where all fish had been feeding for an equal period, in this case, 6 days: e.g., the comparison age for fed fish in Diet I was day 10 and for Diet III, the 2 day delay diet, the comparison age was day 12. At a common feeding period of 6 days, mean fish length for each diet differed (Table 1). Each day of starvation caused fish to be progressively smaller; p was less than 0.01 for all diet combinations except II vs III where p=0.08. The test for the equality of slopes showed that all slopes differed, p=less than 0.0001 for all combinations. Thus, not only does a day of starvation cause a decrement in size at age, but it also

causes a decrement in growth rate after feeding resumes. Depending on feeding history, age of these anchovy at 6.0 mm can range between 12 and 22 days. Amy Kimball NOAA Jr. Fellow, assisted Theilacker with the statistical analyses.

SURVEY SYSTEMS DEVELOPMENT AND EVALUATION

Statistical Technique Developed for Assignment of Age to Staged Anchovy Eggs

A small but important problem in assigning ages to staged anchovy eggs for estimates of mortality and egg production is that an uncertainty of $\pm$ 1 day exists in age for a small fraction of the eggs within a given stage. Typically, such eggs represent only 5-10% of the eggs within a stage but occasionally they may constitute 20%. This uncertainty arises from the fact that the maximum duration of a stage may exceed 40 hours, although the average duration of a stage is much shorter, less than 8 hours at typical temperatures.

To solve this problem, Dr. Paul Smith, Fishery Biologist, assembled all staged egg data from 1980-1983 and Dr. Nancy Lo, Mathematician, performed the following statistical analysis to construct age distributions and estimate the duration of each stage for the combined data (regardless of temperature). A normal distribution was assumed for the ages for a given stage. Within each stage, two cutting points of ages A and B were chosen. These two cutting points, A and B, marked the ages beyond which the egg ages were uncertain (age $< A$ or $> B$). The mean and standard deviation of ages x, $A \leq x < B$ (x: a truncated normal variable) were computed and used to estimate the mean and standard deviation of the entire egg group within a stage.

Dr. Lo found that the standard deviation of the age of egg stages increases in older egg stages (Table 1). The fitted normal distributions are wider than the sample distribution (Figure 1), as can be seen from the example below.

Table 1. Mean ($\bar{x}$) and standard deviation (sd) of age of northern anchovy eggs by stage, plus the duration of each stage, plus the duration of each stage (hours).

Stage	$\bar{x}$[1] hour	min.	sd	duration
1	01	: 53	1:33	4:09
2	06	: 25	3:58	7:35
3	17	: 03	4:40	8:49
4	24	: 03	3:16	7:09
5	31	: 20	5:07	5:54
6	35	: 52	5:20	6:20
7	43	: 59	7:33	5:17
8	46	: 27	5:39	5:42
9	55	: 23	7:42	2:52
10	57	: 56	6:28	3:33
11	62	: 29	6:43	---

[1]22:00 hour is the time of spawning and is the 0 hour for computing the ages.

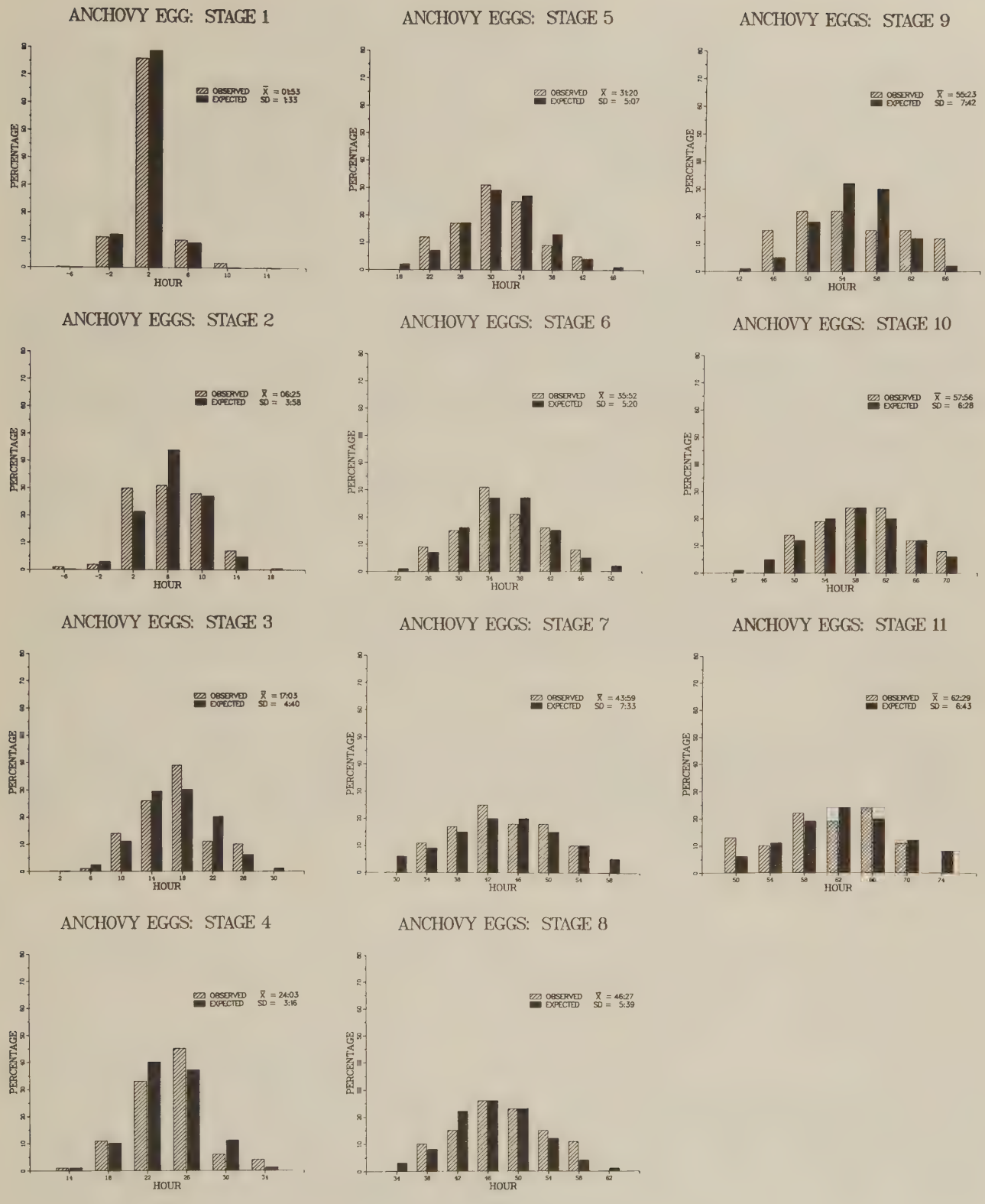

Figure 1. Age distribution of anchovy eggs for each of 11 stages. Observed percentages are based on ages assigned according to time of tow only and the expected percentages are computed from fitted normal distribution with $\bar{x}$ and sd.

For stage 5, the ages of eggs ranged from 20 to 44 hours, whereas the fitted normal distribution shows age in a range from 16 to 48 hours. The differences were mainly due to assignment of ages in the tails of the distribution i.e., eggs taken in the time intervals, 1801-2200 and 1401-1800. From the sample distribution, 12% of eggs were observed during the time interval, 1801-2200. These eggs could be either 22 hours old or 46 hours old; it was impossible to separate those eggs using only the sample distribution. Thus, they would be all assigned to 22 hours old. The fitted normal distribution indicated that 1% of eggs was 46 hours old and 7% was 22-hours old, a total of 8% belonging to the same time interval, 1801-2200. Five percent of eggs were observed belonging to the right tail of the distribution (time interval 1401-1800) and according to the sample distribution all of the eggs would be considered to be 42 hours old. However, the fitted normal distribution, indicated that 2% of stage 5 eggs should be 18 hours old and 4% of the eggs should be 42 hours old, making a total of 6% of eggs which belong to the time interval 1401-1800.

The sample age distributions of eggs based on only the time of tow would produce unbiased estimates of mean ages for each stage but underestimate the standard deviation of age. The fitted normal distribution present a more realistic picture of the age distribution.

Dr. Lo also computed the duration of each egg stage. Stages 1, 9, and 11 are of short duration, 3-4 hours, whereas the other egg stages have durations ranging from 5 to 8 hours. The duration of stage 11 was not available, but was probably short.

According to Dr. Lo, the technique discussed here can be used in the future for assignment of age to staged anchovy eggs where age assignment is ambiguous based on an inspection of the data. This approach will increase the accuracy of ageing and improve the estimate of egg production used in the annual biomass estimate.

Oceanic Fisheries Resources Division

TUNA AND BILLFISH RESOURCES PROGRAM

DNA Samples Completed for About Half of the Delphinid Samples

Northern and southern offshore forms of the spotted dolphin, (Stenella attenuata) are distinguished on the basis of certain external and skull measurements. Spotted dolphins found west of 120°W, however, show affinities with those south of the equator, and east-west and north-south variation seems clinal rather than discrete. The goal of the present project is to use mtDNA nucleotide sequence comparisons to examine relatedness among these northern and southern stocks of spotted dolphins, as well as any other delphinid samples that can be obtained. The more similar the nucleotide sequence, the more closely related are the samples. Further, since the mutation rate of mtDNA can be estimated, a time scale of divergence, if indeed the groups have developed, can be formulated.

To date, no fixed differences have been found between northern and southern offshore spotted dolphin populations. As mentioned in the July monthly report there is, however, a fair degree of polymorphism within the 19 samples. For instance, digestion by the enzyme, Hinc II, of an individual sample produces one of three separate morphs, one of which is only found in the northern population.

The additional delphinid samples (16 samples), Stenella coeruleoalba, S. longirostris, Delphinus delphis, Pseudorca crassidens, Steno bredanensis, Tursiops truncatus, Lagenorhynchus obliquidens, and Lissodelphis borealis, have shown mtDNA restriction patterns which are clearly different. This has not been the case previously when protein electrophoretic methodologies were employed.

MULTISPECIES DATA MANAGEMENT AND FISHERY MONITORING

First Joint Albacore and Squid Assessment Cruise Completed

Drs. Norm Bartoo and Steve Reilly report that many of the staff of the Oceanic Fisheries Resources Division participated in an 18-day at-sea sampling cruise aboard the NOAA Ship David Starr Jordan which ended September 2. The major objectives of the sampling cruise were to sample the albacore population in several different depth strata with gill nets, sample the albacore population with trolled jigs; sample for various squid species, and collect biological data from specimens. Additionally, observations were made of birds and marine mammals along the cruise track.

Operations were conducted off southern and central California, generally in the vicinity of the commercial albacore fisheries. A total of 27 gill net sets were made at depths ranging from the surface to 212 ft. Samples included squid, skipjack and yellowfin tunas, bonito, four species of sharks, plus other fishes. No albacore, however were taken by nets although surface trolling operations produced approximately 130 albacore plus skipjack and yellowfin tunas as well as bonito. Detailed biological data were taken from sampled fish, including gut contents, liver tissue, muscle tissue, otoliths, plus various measurements. Possible changes to sampling nets to improve their effectiveness are being evaluated.

Status of Atlantic Tuna Fishery Sampling Program

Foreign-caught Atlantic tunas transshipped to Puerto Rico are sampled routinely for biological information by biological technician Eugene Holzapfel. Data on fork length, weight, and species composition of catches are collected. Results of Holzapfel's sampling during the period January 1, 1983 to August 31, 1983 are as follows:

Species and gear	# of samples	# of fish sampled	Tonnage sampled (MT)
Yellowfin			
Purse seine	12	800	371.1
Baitboat	16	1134	199.9
Longline	1	71	1.1
Unknown	8	550	108.7
Skipjack			
Purse seine	7	355	2032.2
Baitboat	4	200	433.6
Unknown	2	101	117.6
Bigeye			
Purse seine	9	336	253.7
Unknown	5	125	33.8
Albacore			
Longline	2	100	1262.6
Blackfin			
Baitboat	1	50	12.6

MARINE MAMMAL BIOLOGY PROGRAM

Dolphin Specimens Prepared for Studies of Stock Identity

In conformance with recommendations by a panel of experts that recently reviewed the SWFC's efforts to update stock boundaries for the upcoming assessment of dolphin stocks, the Los Angeles County Museum (LACM) has been contracted to prepare a large series of dolphin specimens. The 250 heads of Stenella attenuata, S. longirostris, and S. coeruleoalba were collected by NMFS and IATTC technicians aboard commercial tuna seiners at the request of SWFC to fill in gaps in geographical coverage by existing study collections. The stock-identity studies will focus on morphological variation along a north-south axis across the equator. The preparations which have been contracted include rough-cleaning, dermestid treatment, final cleaning, labeling and curating. The specimens, which will become part of the permanent LACM study collection, will be ready for use by the SWFC in mid-1984. Additional contracts may be let for preparation of the remaining material.

MARINE MAMMAL ASSESSMENT PROGRAM

Panel of Experts Meet to Review SWFC Manuscripts on Dolphin Species Proportions and School Size

A panel of scientists met August 25-26 to review information on estimation of dolphin species proportion and school size. Dr. Wes Parks served as panel leader. Visiting scientists on the panel were Gordon Broadhead, Living Marine Resources, Inc., Dr. Douglas Chapman, University of Washington, Dr. William Clark, University of Washington, Dr. Philip Hammond, IATTC, and Dr. Terry Quinn, Pacific Halibut Commission.

Three manuscripts were reviewed: (1) "Geographical distributions of species proportions for dolphins of the ETP" by Drs. Jay Barlow and Rennie Holt, (2) "Observer effects in shipboard survey of dolphin abundance" by John Cologne and Rennie Holt, and (3) "ANOVA of photographic and visual estimates of dolphin school size" by Dr. William Clark.

A progress report was provided by Dr. Wes Parks on his study of the effects of various sighting factors on estimates of dolphin school size.

The convening of this panel is part of the development and implementation of a systematic procedure for critical scientific review of research results as the basis for an analysis of the status of porpoise stock to be used in the federal hearings slated in 1985.

Abundance surveys are conducted using ships and aircraft independently of the fishery. The surveys, using line-transect methods have yielded estimates of the density of dolphins in the eastern tropical Pacific Ocean.

The experiment was designed to observe the efficiency of shipboard survey operations by using a helicopter to track dolphin schools before, during, and after shipboard detection. Aerial photographs and video recordings of dolphin schools were taken to document species identifications, school structure, behavior, and school size. Photographs were also taken of other marine life during the progress of the cruise.

Chief Scientist on the cruise was Dr. Roger Hewitt, NOAA Corps Officer on detail to the Southwest Fisheries Center. Other members of the scientific complement included Gary Friedrichsen, Field Biologist, Al Jackson, William Irwin, and Michael Noel, Porpoise Observers.

Following are three photographs taken during the cruise.

Stenella longirostris (spinner dolphins)

Physeter macrocephalus (sperm whale)

Rhincodon typus (whale shark)

TIBURON LABORATORY

FISH COMMUNITIES INVESTIGATION

Unusual Occurrences of Juvenile Rockfishes Noted on Mendocino Coast

Unusual occurrences in nearshore habitats have continued on the Mendocino coast this summer, apparently in response to unseasonably high water temperatures. This is the finding of investigation leader Dr. Edmund Hobson and fishery biologists Tony Chess and Dan Howard, based on observations at their Albion study sites. It was reported last month that young-of-the-year rockfishes of species normally abundant--black rockfish (Sebastes melanops), yellowtail rockfish (S. flavidus) and, especially, blue rockfish (S. mystinus) arrived late and have been much fewer than usual. This condition continued during August, when young-of-the-year copper rockfish (S. caurinus) appeared in relatively large numbers. Juvenile copper rockfish had not been seen in these habitats during the previous 7 years, but at this time was by far the most numerous of the young-of-the-year Sebastes species in these habitats.

Workshop on Age Determination in Groundfish Recommends Methods and Techniques

According to fishery biologists, there is a need to standardize techniques used to determine the age of groundfish species. To meet this need, the Canada-U.S. Groundfish Committee and its technical subcommittee, urged formation of the Committee of Age Reading Experts (C.A.R.E.), which held its second meeting at the Northwest and Alaska Fisheries Center, Seattle, on 3-5 August. Fishery biologist Tina Echeverria of the Rockfish Analysis Task at the Tiburon Laboratory joined participants from all major ageing units on the West Coast, including Canada and the four Pacific states of the U.S.

A manual was completed describing three principal methods used to determine ages in rockfishes (Scorpaenidae; Sebastes). It was agreed that otoliths (sagitta) are the best structure to use in age determinations of rockfish and that the burnt and sectioned method alone, or in combination with the surface method, is currently the best technique to determine ages in the species reviewed. A procedure to monitor precision, within defined acceptable levels of agreement, among all the laboratories involved in determining ages for rockfishes is currently being outlined.

Recommendations were also made for ageing sablefish (Anoplopoma fimbria), using the same techniques employed for rockfish. C.A.R.E. plans to meet yearly to resolve problems of precision or age determination techniques for new species.

On August 19, Ambrose Jerald, head of the ageing unit for the Northeast Fisheries Center, Woods Hole, visited the Tiburon Laboratory and discussed

current ageing techniques with Echeverria. They also discussed the need for a workshop to examine ageing techniques, develop precision, and how to meet the needs of the fisheries.

UNDERUTILIZED FISHERY RESOURCES

Fishing Excellent at FAD Sites

Two fish aggregating devices (FADs) were deployed from the NOAA Ship, David Starr Jordan, at the "60-Mile Bank" and the "43-Fathom Spot" near San Diego on June 27 this year. Project leader Bill Leet of the Tiburon Laboratory reports that the FADs are already showing evidence of worth. Reports from sport fishermen, relayed through Ron Dotson of SWFC, indicated that many fish, mostly skipjack tuna, have been taken near both FADs. One fisherman reported seeing "six fathoms of skipjack" under the FAD at the 60-Mile Bank in late July. On August 6 and 7, the same fisherman caught many skipjack at the 43-fathom spot. On August 3 Leet received word that the attractor buoy at the 60-Mile Bank was missing. This was replaced on August 16 with an attractor using slightly different mooring and flotation systems. During the charter voyage to replace the attractor several hours of fishing by the vessel owner and six guests produced more than 100 fish, mostly yellowfin tuna, within three miles of the 60-Mile Bank FAD.

Fishery for Pelagic Red Crabs May be Revived

Pelagic red crabs (Pleuroncodes planipes) are normally found in large numbers off southern Baja California. This year, however, El Niño conditions have pushed their distribution far northward. Tons of red crabs are being caught by shrimp fishermen off Morro Bay who are having difficulty avoiding them and consider the crabs a major nuisance. Ironically, pelagic red crabs were the object of a small commercial fishery started a decade ago by fishery biologist Sus Kato of the Tiburon Laboratory and two commercial fishermen. They were valued as feed for cultured salmon, being rich in carotenoid pigments which cause flesh of salmon to gain its characteristic orange color. Morro Bay fishermen report that the guts of wild salmon caught nearby are packed with pelagic red crabs. Seizing the opportunity presented by the current unusual conditions, Kato has initiated talks among fishermen, processors, and other potential users of red crab to ascertain demand. For example, the Manchester Laboratory of the Northwest and Alaska Fisheries Center can use a substantial amount of red crab to feed brood stocks of Atlantic and Pacific salmon, since addition of carotenoid pigments to the salmon diet improves the survival rate markedly. It is also possible that commercial salmon culture operations can use red crabs, as they did in the past. Samples of red crabs will be sent to the Pacific Northwest, and the economics of various options will be studied to determine if a small fishery is feasible now, and if a long-term fishery can ultimately be established.

PACIFIC ENVIRONMENTAL GROUP

SWFC Director Presents Group Award to PEG Staff Members

At ceremonies at offices of PEG, a group award was presented to Richard H. Harris, Andrew Bakun, David M. Husby, and Craig S. Nelson by Director Izadore Barrett on August 24, in recognition of their authorship of an important scientific paper entitled "Comparative Climatology of Selected Environmental Processes in Relation to Eastern Boundary Current Pelagic Fish Reproduction." The paper was presented at the FAO-sponsored Expert Consultation to Examine Changes in Abundance and Species Composition of Neritic Fish Stocks, held in San Jose, Costa Rica, March 1983; it will be published in the proceedings of the meeting which will appear in the Intergovernmental Oceanographic Commission Workshop Report series.

In this paper the authors point out that the four major eastern boundary current regions of the world ocean (i.e., the California, Peru, Canary and Benguela systems) contain very similar assemblages of important pelagic fish species, and appear to involve similar environmental dynamics. To the extent that corresponding species in different systems function as analogues, interregional comparative studies may yield information concerning environmental effects on reproductive success that would be difficult to derive from any single regional system. Natural selection implies that observed reproductive habits represent successful accommodation to the most crucial environmental factors. Thus compelling patterns in reproductive and environmental relationships are suggestive of important causal linkages.

The paper illustrates patterns of avoidance of wind-induced turbulent mixing of the upper ocean and of offshore transport, suggesting that these processes have exerted important controls on reproductive success. Thus, these variables appear to merit consideration in modeling recruitment variations. In regions where characteristic temperatures are within physiological limits, temperature does not appear to be a dominant factor in determining spawning habitat. The shallow oxygen minimum layer off Peru may be a significant factor in decreasing competition to pelagic fishery stocks from mesopelagic fish species.

Fisheries Manager From Chile Visits PEG to Initiate Cooperate Research Projects

Sr. Rudolfo Serra, a fisheries manager from the Subsecretaria de Pesca, Santiago, Chile, recently spent three weeks at the SWFC and PEG. The purpose of his visit was to initiate two cooperative research projects with Dr. R. Parrish at PEG and to develop a formalized cooperative pelagic fishery research program between NMFS and Chile. The first research project is a review of the sardines of upwelling regions; including taxonomy, population biology and historical descriptions of the development of the fisheries and

their management. The second is a comparison of ageing programs in different sardine stocks. This latter project will involve a comparison of otolith readings from sardines from different countries. Presently there are 8 countries interested in participating in the study (Chile, Peru, Ecuador, South Africa, Spain, Morocco, New Zealand and the U.S.A.)

FISHERIES INFORMATION AND AUTOMATIC DATA PROCESSING

ADP Procurement Packages Submitted to Washington for Approval

Six procurement packages were sent to Washington, DC, this month for approval and processing, according to Dorothy Roll, Computer Systems Analyst. Requests were submitted for procurement of the following equipment: 1) a hard disk drive to upgrade the CompuPro microcomputer system in the Honolulu Laboratory, 2) procurement of peripheral equipment for the Honolulu Laboratory, 3) computer access to the "California Data Bank" for the Southwest Region, 4) additional memory for the Honolulu Laboratory's CompuPro microcomputer, 5) a hard disk controller board and peripherals for the Oceanic Fisheries Resource Division, and 6) a "La Jolla Standard" microcomputer, associated periherals, modems, and software for the Southwest Region.

Through expeditious handling by Ray Tillery, the Center's contact in the Data Management Office in Washington, DC, all procurement requests have been approved in time to meet the submission deadlines set by the Seattle's WASC office. Tillery monitors the approval processing for all the fisheries computer procurement requests.

Other ADP Activities

A 10 mega-byte Winchester hard disk drive has been installed, and is fully operational in the La Jolla Standard microcomputer. It is being used initially to assist in the development of FRS software which will later be used on the Molecular 32X.

* * * * * * * * * * *

On August 16, Fred Kellenberger, Data Systems Manager met with Nancy Wiley and several staff members of the Tiburon Laboratory who are current or prospective users of the microcomputer network being developed for the Laboratory. The proposed configuration, deployment of peripherals and usage capabilities were discussed. A tentative plan was developed to allocate work stations now in the process of approval; various projects on second phase needs and capabilities were also discussed.

* * * * * * * * * * *

Hank Fischer, Director of UCSD's Computer Center, presented a brief historical background on the management of the Center and discussed the present and future use of the VAX 11/780 system at a meeting at the Southwest Fisheries Center on August 25.

Catch and Vessel Data Processed for Input to the PACFIN System

Computer systems programmer Susan Iacometti continues processing the 1981 catch and vessel data from California, Oregon, and Washington, for input to the PACFIN Fisheries Research Information System (FRIS). The verified data will reside in FRIS under the format and data specifications identical to the Coastwide Data System, which contains the 1974, 1975, and 1976 statistics. Once this system is implemented, researchers will be able to track vessels from Washington to California.

Salmon "Credit Card" Data Collection System Evaluated

Data systems manager Fred Kellenberger, accompanied by Dick Heimann of the California Depart of Fish and Game (CDF&G) traveled to Eureka, California, August 15-19 to participate in an evaluation of the salmon "credit card" system with Joe Lesh of CDF&G. They discussed the "credit card" system with several dealers, all of whom appear very satisfied; the system should improve accuracy of the data by 40%.

Kellenberger and Heimann also met with Ron Warner, Larry Quirrillo, and Pat Collins of CDF&G to discuss groundfish data, and the trawl "credit card" system. Card imprinters for the trawler "credit card" system were delivered at the end of August and the system should be operational by October 1, 1983. Training sessions will be held with dealers to help familiarize them with the system.

Computerized Resources Allocation System Designed for Center

A computerized resources allocation system was designed and implemented at the Southwest Fisheries Center by Robert Bistodeau, a student at the University of California, San Diego, working here as a temporary computer assistant. The purpose of the computerized system is to display current year operating plan information to assist in the development of the FY 1984 budget base allowance. The system, which meets the design specifications outlined by executive officer Ben Remington, allows data to be projected on a large screen for viewing by decision makers, alteration of data values on-line through the keyboard and output in hard copy form of summaries resulting from these changes. On August 23 and 24 the system was successfully utilized for the budget planning meeting.

Work Progresses on Establishment of Communications Network for Southwest Region

Robert Nydam, Computer Programmer Analyst, and Jack Brown, Electronics Engineer, are testig the feasibility of transferring text files from the NBI 3000S word processing system to the La Jolla Standard Microcomputer through

the phone line and directly through a cable between the two systems. This task is associated with the hardware/software procurement request for the Southwest Region. The microcomputer, associated peripherals, modems, and software will establish the communication network, linking the Region's Terminal Island office, the State Street office in San Diego, and the Western Pacific Program Office (WPPO) in Honolulu.

MISCELLANEOUS

PUBLIC AFFAIRS

La Jolla Laboratory

August 19 - Fishery biologist James Squire gave a talk to the Escondido Anglers on "Southern California Fishing and the El Niño. One hundred club members attended the presentation.

25 - Squire also made a presentation to 60 members of the American Cetacean Society meeting at the Santa Barbara Natural History Museum entitled, "Development of the El Niño in the eastern tropical Pacific and its effect on fishery resources."

PRESS RELEASE

Honolulu Laboratory

August 1 - "Research vessel returns from investigations of seamount fishery resources."

La Jolla Laboratory

August 12 - National Marine Fisheries Services Hosts Symposium on Fish Evolution.

SEMINARS

Honolulu Laboratory

August 3 - Dr. Daniel Pauly, International Center for Living Aquatic Resources Management (ICLARM), Manila, Philippines, spoke on "Recent approaches to tropical stock assessment."

22 - Dr. Mike Bradstock, Ministry of Agriculture and Fisheries, Nelson, New Zealand, spoke on "The relationship betweem estuarine habitats and commercial fish species in New Zealand."

La Jolla Laboratory

August 4 - Ruth Wahpecome, President, Federal EEO Council, San Diego and Chair, Federal Women's Program Division, San Diego, California, presented a talk entitled, "Federal Women's Program and Federally Employed Women--Their Goals and Your Career Development."

11 - Dr. Mike Bradstock, Ministry of Agriculture and Fisheries, Nelson, New Zealand, presented a lecture on "Pelagic fisheries for mackerels and kahawai in southern New Zealand."

- Mr. Rudolfo Sera, Subsecretariat of Fisheries Chile, discussed "Pelagic fisheries of Chile."

- Judy Kaplan Baron, Career Consultant, presented a seminar on "Image and Self-Projection," sponsored by the Federal Women's Program at the Southwest Fisheries Center.

12 - Mrs. Mary Kovac, a consultant who specializes in federal regulations, presented three separate seminars on this subject.

VISITORS

Honolulu Laboratory

August 2 - Dr. Daniel Pauly, ICLARM, Manila, Philippines.

8 - Morton Sworken, Deputy Chief of Mission, U.S. Embassy, Port Moresby, Papua New Guinea.

12 - Dr. Yoshinobu Hasegawa, Assistant Director, Fisheries Institute of Nagasaki.

16 - Dr. Jack Davidson, UH Sea Grant Program, and Dr. Richard Grigg, Hawaii Institute of Marine Biology, UH, met with Richard S. Shomura and R. Uchida to discuss seamount research.

22-23 - Dr. Mike Bradstock, Fisheries Management Division, Ministry of Agriculture and Fisheries, Nelson, New Zealand, and Mrs. Bradstock.

26 - Alan F. Ryan, International Fisheries Development and Service Division (F/M32).

- Kenneth Sherman, Director, Narragansett Laboratory, Northeast Fisheries Center (F/NEC2).

29 - Dr. Shoji Ueyanagi, Department of Fisheries, Faculty of Marine Science and Technology, Tokai University, Shizuoka, Japan, and Mrs. Ueyanagi.

La Jolla Laboratory

August 1 - Messrs. David Rand, Robert Wolf, and Norris Jeffrey from Dr. Angelovic's group in Washington, DC, here to attend the program reviews.

- Beth Haeker, Los Angeles County Museum here to work on age determination of specimens of Tursiops teeth with Dr. Al Myrick and staff.

10 - Y.Hasegawa, Fisheries Institute of Nagasaki, Nagasaki, Japan.

15 - Mitsuyo Fukuda, San Diego Japanese School, San Diego.

- Satoshi Mito, Fisheries Agency, Ministry of Fisheries, Tokyo, Japan.

24-25 - Dr. Rudy Englemann of OAR to discuss fisheries oceanography and specifically the Fisheries Oceanographic Cooperative Investigations.

24-27 - Drs. Douglas Chapman, Terry Quinn, and William Clark here for Pre-SOPs meeting, C1.

26 - Mr. John Bovard, NMFS Congressional liaison for Fisheries.

31 - Yoshiaki Ito, Vice Consul, Office of Consul General of Japan in Los Angeles, California.

Tiburon Laboratory

August 12 - Keiichiro Mori, Seikai Regional Fisheries Research Laboratory, Yamaguchi, Japan.

31 - John Bavar, NOAA, Washington, DC.

MEETINGS AND TRAVEL

Honolulu Laboratory

August 1-5 - Richard Shomura traveled to Noumea, New Caledonia, to participate in the 15th Regional Technical Meeting on Fisheries of the South Pacific Commission.

- Dr. Skillman attended the Council meeting in American Samoa.

La Jolla Laboratory

August 1 - Dr. Barrett participated with deputy director John Carr, planning officer David Mackett, and Dr. Gary Sakagawa, Chief of the Oceanic Fisheries Division in a review of the Tuna/Porpoise Task.

2 - Dr. Barrett, John Carr and Dr. Lasker attended a CalCOFI Retreat at the Scripps Institution of Oceanography.

3-5 - John Carr traveled to Bodega Bay, California, to participate in the fisheries part of a University of California Sea Grant review at the Laboratory.

8 - Dr. Barrett and John Carr traveled to Dana Point to attend a Region/Center meeting to discuss topics of mutual interest with Acting Southwest Region Director Floyd Anders and Gary Smith.

9-10 - Dr. Barrett, with John Carr and David Mackett, participated in a review of the Coastal Division, led by Dr. Reuben Lasker, Division Chief, and his senior scientific staff.

11-18 - Dr. Doug DeMaster traveled to San Miguel Island to remove depth-of-dive tags from sea lions and meet with Sanctuary personnel.

14-16 - Dr. Barrett traveled to Washington, DC, to attend a Department of Commerce budget priority conference.

15-19 - Fred Kellenberger, traveled to the Tiburon Laboratory at Tiburon, California, to discuss ADP activities and then on to Eureka, California, to participate in the evaluation of the CF&G/NMFS Salmon Credit Card system.

15-20 - Dr. Gary Sakagawa traveled to Milwaukee, Wisconsin, to attend the annual meeting of the American Fisheries Society.

18 - Dr. Barrett, with senior staff, participated in a review of the Center's Administrative Task.

19 - Fred Kellenberger was at the PEG laboratory to discuss ADP activities.

19-23 - Ginny Hostler traveled to Seattle, Washington, to meet with WASC staff for discussions of administrative matters.

22-24 - Dr. Douglas DeMaster traveled to San Francisco, California, to meet with the Sea Otter Subcommittee of the Marine Mammal Commission.

22-26 - Larry Hansen, Mark Lowry and Roberta Folk visited Santa Barbara Island, California, to tag sea lions and collect sea lion scats.

24-25 - Dr. Barrett traveled to PEG, Monterey, California, and to Tiburon Laboratory to conduct Merit Pay appraisals.

Tiburon Laboratory

August 30 - September 2 - Dr. William Lenarz attended meeting on stock assessment of yellowtail and canary rockfish in Seattle, Washington.

August 2-5 - Tina Echeverria attended Age Determination Workshop in Seattle, Washington.

14-18 - Mickey Eldridge attended the Ahlstrom Symposium at Scripps Institution of Oceanography and conferred with John Butler on daily growth ring research in La Jolla, California.

15-17 - Susan Smith attended the Ahlstrom Symposium at Scripps Institution of Oceanography and met with Dr. Ed Brinton on euphausiid work.

16 - Dr. A.R. Sen and Mark Allen observed biological sampling operations of commercial rockfish landings in Moss Landing, California.

29-30 - Sus Kato traveled to Morro Bay to obtain a sample of pelagic red crabs collected by a shrimp fisherman and to discuss the possibility of starting a small fishery for these crabs.

PERSONNEL ACTIONS

Honolulu Laboratory

August 1 - Louise F. Lembeck, Editorial Clerk (Typing) - Part Time Temporary Appointment.

6 - Doris J. Alcorn, Wildlife Biologist - Termination.

- C. Edward Bowlby, Wildlife Biologist - Termination.

13 - Elizabeth K. Buelna, Biological Aid (Wildlife) - Termination.

- Robert J. Morrow, Biological Aid (Wildlife) - Termination.

14 - Miriam B. Pillos, Biological Science Student Trainee (NOAA Jr. Fellow) - LWOP Status.

18 - Daniel R. Locey, Computer Science Student Trainee (NOAA Jr. Fellow) - LWOP Status.

21 - Theresa K.M. Villanueva, Biological Science Student Trainee (NOAA Jr. Fellow) - LWOP Status.

30 - Thea C. Johanos, Wildlife Biologist - LWOP Status.

La Jolla Laboratory

August 7 - Roberta Folk, Biological Science Student Trainee (NOAA Jr. Fellow) - Promotion.

- Lisa Lau, Biological Science Student Trainee (NOAA Jr. Fellow) - Promotion.

- Lorraine Prescott, Support Services Supervisor - Reclassification.

12 - Lalitha Avula, Computer Specialist - Resignation.

- Marlene Johnson, Biological Science Student Trainee (NOAA Jr. Fellow) - Extended LWOP.

21 - Louis Arnell, Biological Technician (Microbiology) Change of Schedule.

22 - Morgan Busby, Biological Aid - Pay Adjustment/Intermittent.

- Laura Wing, Computer Assistant - Change of Schedule.

29 - Roberta Folk, Biological Science Student Trainee (NOAA Jr. Fellow) - Extended LWOP.

- Kathy McKune, Clerk Typist - Change of Schedule.

Tiburon Laboratory

August 5 - Kathryn A. Barry, Biological Aid - Termination.

7 - Frank Jacques, Biological Science Student Trainee - LWOP.

14 - Susan Logan, Biological Aid - LWOP.

21 - Steven J. Pace, Biological Aid - Extension of Appointment.

23 - Gregory Hall, Biological Aid - Extension of Appointment.

UNITED STATES
DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
8604 LA JOLLA SHORES DRIVE
P.O. BOX 271
LA JOLLA, CALIFORNIA 92038

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE, $300

AN EQUAL OPPORTUNITY EMPLOYER

POSTAGE AND FEES PAID
DEPARTMENT OF COMMERCE
210

THIRD CLASS